IN THE SPECIFICATION:

Please amend the specification as follows:

Page 8, after the fourth full paragraph, after line 22, please insert the following new paragraphs:

The present invention includes a method for recognizing a model object in a first image which includes the steps of:

(a) acquiring in electronic memory the first image of the model object;

(b) transforming the first image of the model object into a multi-level representation consistent with a recursive subdivision of a search space, the multi-level representation including at least the first image;

(c) generating at least one precomputed model of the model object for each level of discretization of the search space, the precomputed model consisting of a plurality of model points with corresponding direction vectors, the model points and direction vectors being generated by an image processing operation that returns a direction vector for at least each model point;

(d) acquiring in electronic memory a current image;

(e) transforming the current image into a multi-level representation consistent with a recursive subdivision of the search space, the multi-level representation including at least the current image;

(f) performing an image processing operation on each transformed image of the multi-level representation that returns a direction vector for a subset of

model points within the current image that corresponds to the range of translations for which the at least one precomputed model should be searched;

(g) computing a match metric that uses the direction information of the at least one precomputed model and the transformed image for all possible model poses of the at least one precomputed model in the coarsest discretization level of the search space;

(h) determining those model poses whose match metric exceeds a user-selectable threshold and whose match metric is locally maximal, and generating a list of instances of the at least one precomputed model in the coarsest discretization level of the search space from the model poses and the match metrics;

(i) tracking the instances of the at least one precomputed model in the coarsest discretization level of the search space through the recursive subdivision of the search space until a finest level of discretization is reached; and

(j) providing the model pose of the instances of the model object on the finest level of discretization.

The present invention includes a system for recognizing a model object in a first image which includes:

(a) means for acquiring in electronic memory a first image of the model object;

(b) means for transforming the first image of the model object into a multi-level representation consistent with a recursive subdivision of a search space, the multi-level representation including at least the first image;

(c) means for generating at least one precomputed model of the model object for each level of discretization of the search space, the precomputed model consisting of a plurality of model points with corresponding direction vectors, the model points and direction vectors being generated by an image processing operation that returns a direction vector for at least each model point;

(d) means for acquiring in electronic memory a current image;

(e) means for transforming the current image into a multi-level representation consistent with a recursive subdivision of the search space, the multi-level representation including at least the current image;

(f) means for performing an image processing operation on each transformed image of the multi-level representation that returns a direction vector for a subset of model points within the current image that corresponds to the range of translations for which the at least one precomputed model should be searched;

(g) means for computing a match metric that uses the direction information of the at least one precomputed model and the transformed image for all possible model poses of the at least one precomputed model in the coarsest discretization level of the search space;

(h) means for determining those model poses whose match metric exceeds a user-selectable threshold and whose match metric is locally maximal, and generating a list of instances of the at least one precomputed model in the coarsest discretization level of the search space from the model poses and the match metrics;

(i) means for tracking the instances of the at least one precomputed model in the coarsest discretization level of the search space through the recursive subdivision of the search space until a finest level of discretization is reached; and

(j) means for providing the model pose of the instances of the model object on the finest level of discretization.

Page 10, please amend the original 10th and 11th full paragraphs, lines 20-24, and add thereafter two new paragraphs as follows:

Figure 5 shows a preferred embodiment of the model generation method according to the present invention; ~~and~~

Figure 6 shows another preferred embodiment of the model generation method according to the present invention;

Figure 7 shows a schematic block diagram of an object recognition system implementing the model generation method of Figures 1-6; and

Figure 8 shows a schematic block diagram of a computer using a computer readable medium to implement the model generation method of Figures 1-6.

Page 11, after the first full paragraph, lines 2-3, please insert the following new paragraphs:

The present invention also provides an object recognition system shown in Figure 7 for use with a computer as shown in Figure 8 to implement the methods described herein in conjunction with Figures 1-6.

The system for recognizing a model object in a first image shown in Figure 7 includes:

(a) means for acquiring in electronic memory a first image of the model object;

(b) means for transforming the first image of the model object into a multi-level representation consistent with a recursive subdivision of a search space, the multi-level representation including at least the first image;

(c) means for generating at least one precomputed model of the model object for each level of discretization of the search space, the precomputed model consisting of a plurality of model points with corresponding direction vectors, the model points and direction vectors being generated by an image processing operation that returns a direction vector for at least each model point;

(d) means for acquiring in electronic memory a current image;

(e) means for transforming the current image into a multi-level representation consistent with a recursive subdivision of the search space, the multi-level representation including at least the current image;

(f) means for performing an image processing operation on each transformed image of the multi-level representation that returns a direction vector for a subset of model points within the current image that corresponds to the range of translations for which the at least one precomputed model should be searched;

(g) means for computing a match metric that uses the direction information of the at least one precomputed model and the transformed image for all possible model poses of the at least one precomputed model in the coarsest discretization level of the search space;

(h) means for determining those model poses whose match metric exceeds a user-selectable threshold and whose match metric is locally maximal, and generating a list of instances of the at least one precomputed model in the coarsest discretization level of the search space from the model poses and the match metrics;

(i) means for tracking the instances of the at least one precomputed model in the coarsest discretization level of the search space through the recursive subdivision of the search space until a finest level of discretization is reached; and

(j) means for providing the model pose of the instances of the model object on the finest level of discretization.

The object recognition system of Figure 7, implementing the methods of Figures 1-6, may be provided on a computer program product as shown in Figure 8, which includes program code means stored on a computer readable medium for performing the methods described herein when the computer program product is run on the computer shown in Figure 8.

The object recognition system of Figure 7, implementing the methods of Figures 1-6, may be provided as computer program as shown in Figure 8, which includes program code means for performing all steps of the methods described herein when the computer program is run on the computer shown in Figure 8.